Government of Bombay

Report

on the

Working of the Development Directorate

For the Year ending 31st March 1924

00133189

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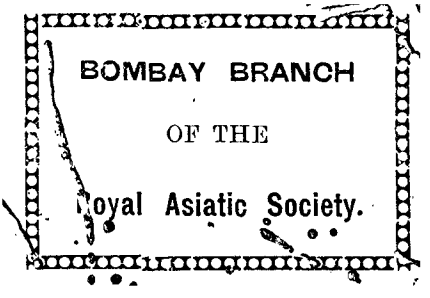

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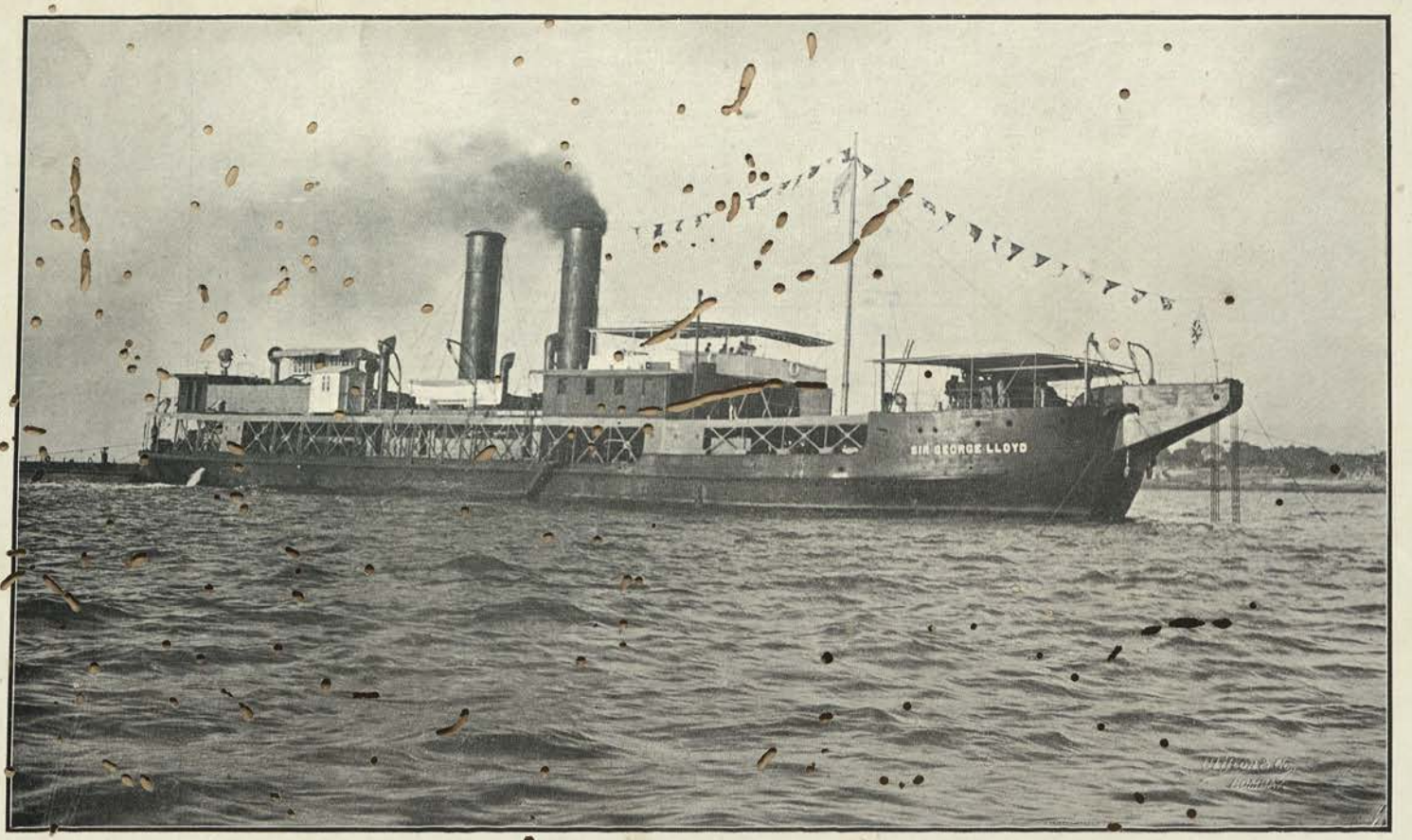

The Dredger *Sir George Lloyd.*

REPORT ON THE WORKING OF THE DEVELOPMENT DIRECTORATE

FOR THE YEAR ENDING 31ST MARCH 1924.

The main feature of the year's work was the commencement of the filling of the Back Bay Reclamation at Colaba in December 1923. The reclamation and housing schemes made satisfactory progress; but, as in 1922-23, work in the suburbs was curtailed, and the staff reduced, pending a more active demand for the developed building sites, which have already been made available.

BACK BAY RECLAMATION.

2. *Kandivli quarry.*—During the year the quarry face was lengthened by 280 feet to the north, and three crane navvies, running on a special track laid on the quarry floor, were brought into use for the purpose of facilitating the handling of the heavy stone protection blocks. The concrete block making yard, referred to in the last report, was completed, and a large number of blocks for the storm-water drains in the reclamation were made. As a result of experience gained during the epidemic of plague early in 1923, an isolation camp for 200 cases was constructed during the year, but, fortunately, there has so far been no necessity to use it. The output of the quarry during the year was 3,99,281 tons, the largest month's output, January 1924, being 41,214 tons. The total output to date has been as follows:—

1921-22	..	38,474 tons.
1922-23	..	235,839 ,,
1923-24	..	399,280 ,,
Total	..	673,593 ,,

The ordinary rubble weighing 27 cubic feet to the ton.

3. *Marine Lines.*—The gantry was extended to 6,550 feet from zero during the year and the rubble mound, with protection blocks, to 6,480 feet, the total quantity of stone deposited being 89,805 tons. The concrete wall was completed to 5,630 feet from zero by 31st March and has since been finished for the full length of the rubble mound. The outlets through the sea-wall for storm-water drains Nos. 7 and 6 were completed, and the diversion of the municipal storm-water drain, passing under Marine Street, to storm-water drain No. 9 was taken in hand. On the latter work, 92,000 cubic feet of excavation had been done by the end of the year and 24,622 cubic feet of concrete deposited, the total length finished being 840 lin. feet. The construction of a cross drain to connect the two municipal storm-water drains passing under Willoughby and Carnegie Roads was commenced, to enable

both these drains to discharge into the new storm-water drain No. 8. A steam grab barge was obtained during the year for excavating, under water, the foundations of the storm-water drains necessary to connect the existing municipal outfalls along the foreshore with the openings which have been provided for the purpose under the sea-wall. Cross bund No. 7 opposite Church Gate Station, was completed to 1,200 lin. feet, a gap being left between it and the main wall to allow of the passage of barges, etc., in connection with the construction of the storm-water drainage system.

4. *Colaba.*—Work on the sea-wall at Colaba proceeded rapidly during the year, being pushed on specially in view of the commencement of the filling. Five thousand and seven feet of end tipping was done during the year, the bank head being at 8,796 feet on 31st March. The concrete wall on rubble mound was completed for a distance of 3,736 feet making, with the 2,000 feet of concrete wall built directly on the reef, a total length of completed wall of 5,736 feet. The special steel forms used in the construction of the concrete wall on the rubble mound proved a great success, the progress averaging 1,000 lin. feet a month. The work on the main storm-water drainage system was satisfactory. Cross bund No. 1 was completed up to its junction with the main wall, and a railway track laid along it was brought into use for the transport of stone for the further progress of the work.

5. *Dredging and filling.*—No. 1 pipe line was laid across the Colaba peninsula during the year immediately south of the British Hospital. On the harbour side a rubble mound was constructed on the foreshore as far as the low spring tide limit, and the pipe laid on this was joined up with the floating pipe line by means of a special pontoon and the necessary flexible connections. Across the peninsula, the pipe was laid in a trench, and the extremely hard rock met with in carrying out this part of the work caused some delay. The floating pipe line, with its numerous ball and socket joints, gave a certain amount of trouble at first, but, as soon as the men in charge of it gained the necessary experience, there were no further difficulties. The actual dredging was started on the morning of 8th December 1923 by His Excellency Sir George Lloyd, and by the end of the year some 500,000 cubic yards had been deposited. The material obtained proved to be of much better quality than had been anticipated, being a hard heavy clay, with sand. The project estimates provide for the construction of 8 cross bunds intended to retain the pumped material during the process of filling. In view, however, of the quality of the material obtained Sir George Buchanan, during his cold weather visit, decided that the construction of further bunds will not be necessary, an economy which will result in a saving of about Rs. 17 lakhs. The dredger "Sir George Lloyd" worked without the assistance of the "Colaba" during the season, as the total length of pipe did not necessitate the use of an intermediate pumping station. Next cold weather the "Sir George Lloyd" will be moved further out in the harbour and the services of both dredgers will be required. The "Sir George Lloyd" was worked

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Discharge from Dredger Pipe Line at Colaba. Date 3rd February 1924.

one shift of ten hours daily, but next year it is intended to work the whole of the plant two shifts a day. The dredger "Kalu" was reconditioned during the year and the intention was to start her filling at Marine Lines from Back Bay next October. Before this can safely be done, however, it is necessary to remove the submarine cables to a new alignment and if this cannot be effected in time, the "Kalu" will also work to begin with at Colaba from the harbour side, pumping through a second pipe line across the peninsula, the construction of which was in hand at the end of the year. The following additional plant was obtained during 1923-24 :—

2 Steam tugs,
2 Water barges,
2 Crane barges,
1 Oil barge,
2,250 feet of floating pipe line.

6. Sir George Buchanan visited Bombay during the cold weather and made a detailed inspection of the works. He is expected in Bombay next October in order to be present at the re-commencement of the dredging and filling, which is now the most important item of the work. A diagram showing the position of the Back Bay Reclamation Works at the end of the year will be found in the pocket of this report. The approximate total expenditure on the Back Bay Reclamation up to 31st March 1924, including interest charges, was Rs. 406,47,618.

7. *Inspection of the Back Bay Reclamation Works.*—During the working season 1923-24 special inspections were arranged to afford members of local bodies and others facilities for seeing the progress of the work, as follows :—

Legislative Council.
Chamber of Commerce.
Bombay Municipal Corporation.
Indian Merchants' Chamber.
Bombay Trades' Association.
Bombay Press.
Secretariat and clerical establishments, Development Directorate.

8. *Sanitary Committee.*—The report of the Sanitary Committee for the year ending 31st March 1924 is printed as Appendix "A" to this report and may be taken as very satisfactory. The recommendation with regard to the small areas lying between the embankment of the Marine Lines Colaba Railway and the existing foreshore line is being attended to, and these areas are being rapidly filled in with quarry spoil and moorum brought from Kandivli.

EAST COLABA RECLAMATION.

9. A length of 2,032 feet of the branch line to serve this area was constructed during the year, with the necessary level crossing over the main Colaba Road. It was not possible to proceed with the sea-wall

of this reclamation during the period under review, as the whole of the output of the quarry was required for the Back Bay Reclamation Works.

INDUSTRIAL HOUSING IN BOMBAY.

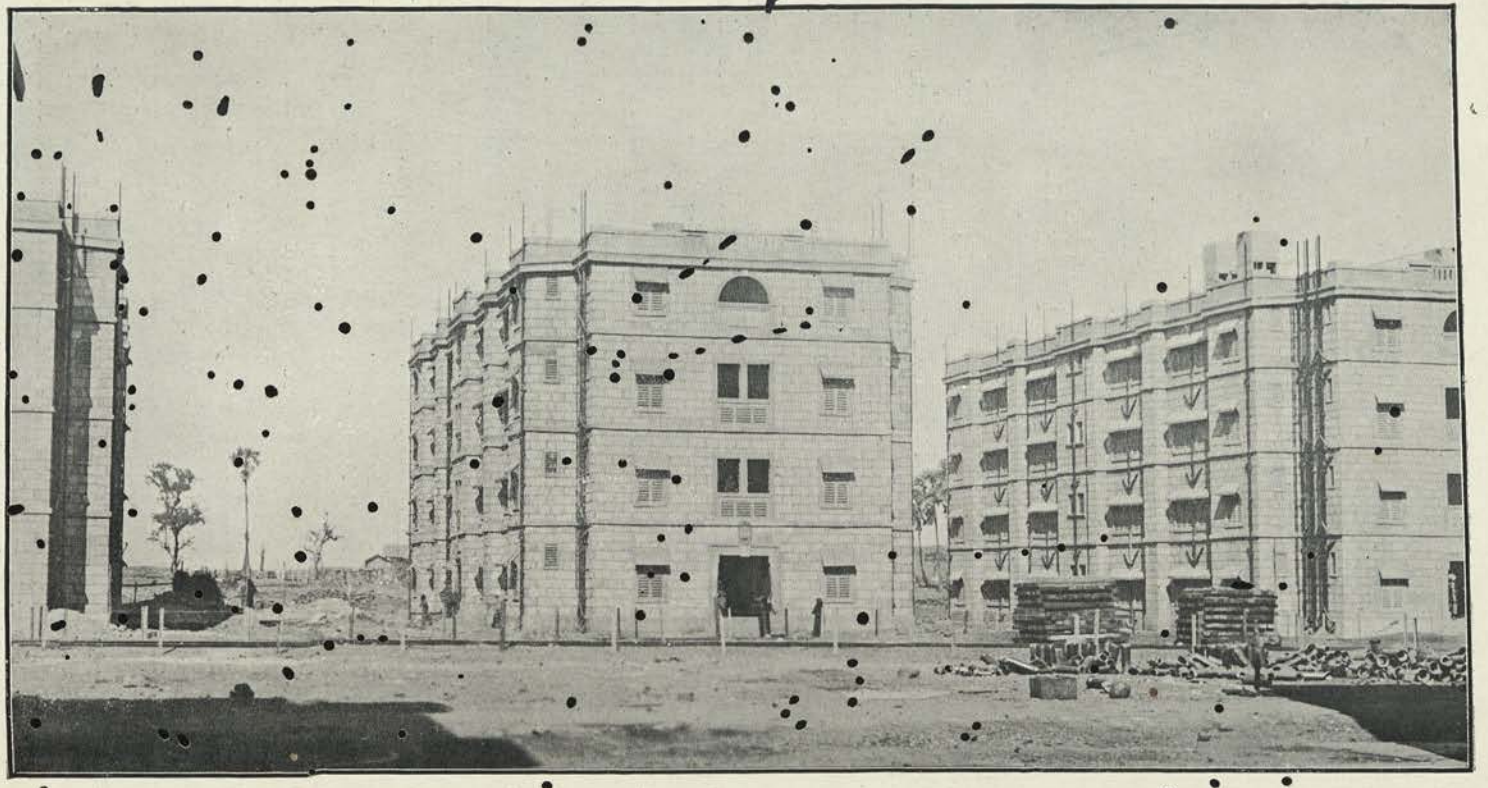
10. The programme provides for the completion of 135 chawls by 31st March 1924, against which the equivalent of 131 had been finished by that date. Had it been important to push the construction work more rapidly, the remaining four chawls could have been completed as well, but for reasons explained below it was not found necessary to accelerate the progress. On reference to the report for the year 1922-23, it will be seen that the equivalent of 56 chawls were completed by 31st March 1923, so that the work done during the year under review was equivalent to 75 chawls as provided for in the original programme.

11. The total number of chawl buildings fully completed on 31st March 1924 either handed over for letting, or awaiting drainage or water supply connections, was 80, of which 49 were handed over for letting, as follows :—

Naigaum plot A	19
DeLisle Road	15
Worli	15

In regard to the balance, water-supply, drainage and sewer connections will soon be available at all sites, but in this connection considerable difficulties have had to be surmounted. In the first place the pressure in the municipal water mains is at present so low that temporary pumping plants and reservoirs have had to be installed at all sites, and will have to remain in operation until the new Tansa mains have been brought into use. Furthermore, except at Worli, it has not been possible to drain any site by gravitation into existing municipal sewers. At Naigaum a septic tank has been constructed for plot A, which may have to be duplicated to take the sewage of plot B as well, until the proposed new municipal sewers in the north of the Island are provided. At DeLisle Road two septic tanks have been constructed to enable the chawls to be occupied pending the completion of the new municipal sewer in De Lisle Road, which is now in progress. For the Worli area, the sewerage of the 20 chawls of block A has been completed, whilst the scheme for the remainder of the area has been approved by the Municipality. Fortunately, in this case, it is just possible to gravitate into an existing sewer at the junction of Haines Road and Fergusson Road.

12. The only new scheme embarked on during the year was at Sewri, where sufficient land has been leased from the Bombay Port Trust for the construction of 16 chawls (1,280 tenements) for the workmen at the new Cotton Depôt. The contract was let towards the end of the year and work was being vigorously pushed forward at the close. It is anticipated that two of the chawls will be completed and ready for occupation early in July of this year.



Directorate Chawls at Worli showing the open space left between each block.

13. The Industrial Housing Scheme of 50,000 tenements was conceived during the boom period when labour conditions in Bombay were probably abnormal. It is beginning to be doubted whether there exists at present any such shortage, and in order to avoid the risk of overbuilding, Government have decided not to take up any more land for housing until the chawls now under construction (16,880 tenements) have been completed. This involves a modification of the original programme to construct 50,000 tenements in eight years, but in view of present conditions, it is undoubtedly a prudent policy to test the demand for housing in actual practice before proceeding further.

14. There has been little difficulty in letting rooms at Naigaum and DeLisle Road, but at Worli the vacancies are considerable. At present the area lacks communications, as well as the ordinary amenities of proper roads and lighting. The construction of so many chawls on one site makes access difficult to finished chawls, and it is not perhaps to be wondered at that the area has not, up to the present, proved so popular as the others. In time, however, when the necessary roads have been completed and lighted, and when all construction work has been finished, shops and market provided, it is to be expected that the necessary atmosphere will be acquired and that there will be no difficulty in finding tenants. During the year thousands of leaflets printed in Marathi and Gujarati were distributed amongst the workmen of practically all the mills and workshops in Bombay, giving full details as to the Directorate chawls.

15. In letting the chawls encouragement has been given to various bodies such as the Social Service League, the Depressed Classes Mission, the Maratha Samaj, the Dnyanodaya Samaj, and certain Christian organisations, to take complete blocks. These bodies endeavour to inculcate habits of decency and cleanliness among the tenants and are of great assistance to the Land Manager, Development Directorate, and his staff in keeping things in a sanitary state. When it is recognized that a great percentage of the tenants have to be continually checked for throwing kutchra and liquids from windows, failure to make use of dust-bins, burning cow-dung cakes as fuel, keeping goats and fowls in their rooms (to mention but a few of their least objectionable practices), the difficulty of the task, which confronts this staff, can be more readily appreciated.

16. The vital statistics maintained by the Land Manager, Development Directorate, show a death rate during the year in the Directorate chawls of 6·66 per thousand, compared with the average for the municipal wards in which the chawls are situated of 35·90, or for the whole city of 31·11 per thousand. The highest death rate was at Worli, where there are a large number of low caste Mahars, amongst whom there is not the slightest idea of cleanliness or sanitary habits. None the less, the figures are encouraging and justify the efforts which are being made to enforce cleanly and sanitary habits on the tenants.

PROVISION FOR THE EXPANSION OF INDUSTRIES OUTSIDE BOMBAY.

17. *Suburban Scheme No. 1—Kurla-Kirol.*—Work in this scheme remained in abeyance during the year. One site was sold, and a small match factory was erected and brought into use. As the site has access to an existing road, no expenditure on development was required.

18. *Suburban Scheme No. 2—Trombay, North-East.*—Work on the new tannery area remained in abeyance during the year, the Bombay Municipality having granted renewals of licenses to the Dharavi tanners for a further two years. Pending a definite settlement on the question of the removal of this trade from the Island of Bombay, the work of constructing roads, drainage, water-supply, etc., in the area must stand over. An area of 300 acres, south of the Sion-Trombay Road, has been allotted to the Bombay Municipality for the purpose of milch-cattle stables. Out of this area, 40 acres were taken up by the Municipality during the year and it is understood that the organisation of the business on sanitary lines, and on a comprehensive scale, is to be proceeded with. In connection with the new slaughter-house area in this scheme, certain minor drainage works were undertaken, in consultation with the Municipal Executive, with a view to diverting surface water and to render the area immune from flooding. The actual transfer of the slaughter-house from Bandra to the new site had not been commenced by the Municipality by the end of the year.

19. *Suburban Scheme No. 22—Kurla-Trombay Railway.*—During the year the first 1·86 miles of the Municipal kutchra siding from Kurla was taken over from the Municipality and formally transferred to the G. I. P. Railway who, towards the end of the year, established a regular passenger train service between Kurla and Chembur, to the great convenience of residents in the latter area. The earthwork for the extension of the line from Chembur to Trombay was taken in hand and completed as far as Mandala Station, which will serve the new tannery area. Further work on the extension was, however, stopped in view of the uncertainty as to the date of the transfer of the tannery trade from Dharavi to the new area. Negotiations with regard to the terms of working of the line were in progress with the G. I. P. administration at the end of the year.

20. *Suburban Scheme No. 15—Ambernath.*—A fourth factory site was sold in this area during the year to the Swedish Match Company. The buildings were nearly completed and the plant was under erection on 31st March 1924. This is the first instalment of what is intended to be a large factory, covering some 12 to 13 acres, additional land being taken over each year for three years, and the factory extended, as business develops. Owing to the increase in the population of the area, the temporary water-supply is now found to be inadequate and arrangements were being made at the end of the year to distribute water from the permanent supply. The approach roads to all existing factories were completed, together with a road connecting Ambernath Station with the Kalyan-Badlapur Road. Roads for staff bungalows and workmen's

Street in Mandvi.

quarters were practically finished. During the year a burial-ground with approach road was provided. Existing sewage arrangements are by means of septic tanks, but a small activated sludge plant is being installed as an experiment and, if successful, will probably be extended to deal with the sewage of the area. The temporary markets which have been established have been a great success, and there is a constant and increasing demand for more shops. The G. I. P. Railway are running a shuttle service between Kalyan and Ambernath with a good number of passengers, and are considering the remodelling of Ambernath Station to deal with the traffic of the factories. This question has somewhat delayed the provision of sidings to the factories themselves, but it is hoped that this matter will shortly be settled. Expenditure in the area is being strictly restricted to the needs of the existing factories and their employees.

21. *Suburban Scheme No. 21—Permanent Water-supply at Ambernath.*—The barrage and weir were completed during the year including the steel gates which were tested and found satisfactory. The filtration plant was finished, with the exception of a few minor items, and is expected to be in working order shortly. Owing to delay in arrival of the permanent motor driven pumping plant from England, it has been necessary to instal a temporary engine and pump to fill the reservoir and to meet the hot weather requirements of Ambernath this season.

22. *Suburban Scheme No. 23—Supply of Electric Power at Ambernath.*—The provision of a small power station was sanctioned and put in hand during the year. It will supply energy for running the permanent pumping plant at Badlapur, and to meet the demands of the present factories in the area. The plant has been laid out, so that it can easily be supplemented, should further demand arise in the future. The power-house was practically completed at the end of the year, and the plant was under erection.

SUBURBAN DEVELOPMENT.

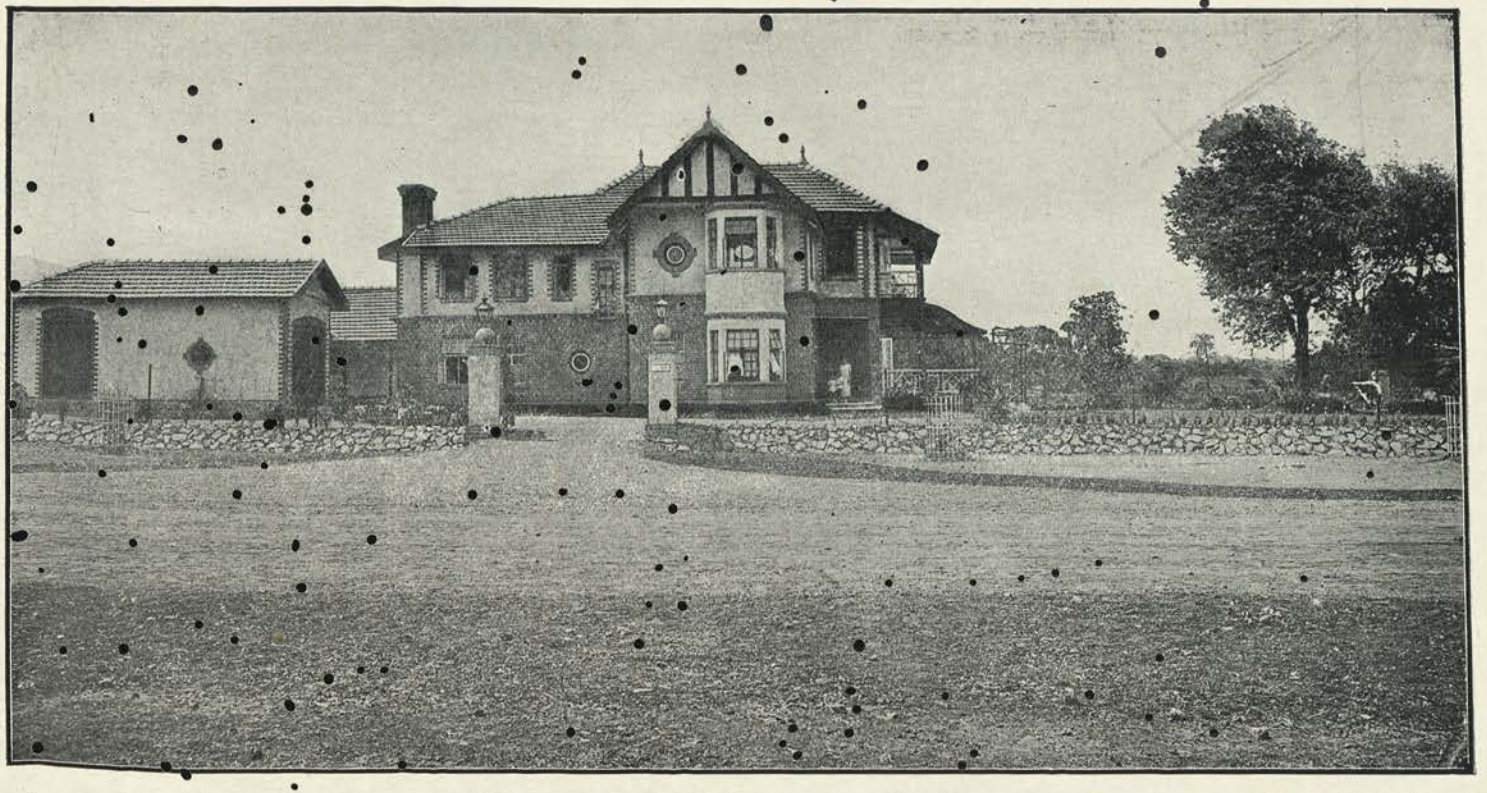
23. The year covered by the present report has been one of almost complete stagnation in the property market, the primary cause being the inevitable slump following the speculative period of 1919-20. At that time all and sundry bought land, with money obtained, in the majority of cases, from war trading profits. Most of the speculators knew nothing about land, but bought it to pass on quickly, at as large a profit as possible, to other equally ignorant speculators. It was in fact a huge gamble which became fast and furious, and resulted in the inevitable exhaustion of those participating. The end of the boom did not lead to any general selling of land at the best price obtainable, and the majority of those left with land bought at high prices are apparently holding it, there being but a comparatively insignificant number of forced sales. What sales are taking place are at prices about half of those obtaining in the boom of 1919.

24. A contributing factor in the low prices now ruling for land in the suburbs is doubtless the fact that the notifications of Government have

covered almost all the good building land within a convenient distance of Bombay, and the public are aware that these lands will be gradually developed, as demand arises, and sold at prices representing little more than the cost of acquisition *plus* cost of development. Any further speculative boom in Bombay Suburban land would indeed appear to be rendered practically impossible by the fact that the Development Department will, for twenty or thirty years to come, be in a position to meet all demands from the public in the Suburban Area.

25. In outer Bombay, there is probably now as much developed land as is required for present purposes, and it is obvious that, so far as Suburban Schemes financed by Government are concerned, it would be imprudent to undertake further liability unless and until there comes about a general move to the suburbs by a large section of Bombay's inhabitants. The difficulty is that the typical middle class Bombay resident has become used to living in one, two, or three rooms in a building let out in tenements, in a more or less crowded locality. He has not been educated into living in the suburbs and having his own house and garden, and has probably always looked on this as an idealistic dream impossible of realisation. Inadequacy of suburban railway facilities, shortage of water-supply and a general feeling of insecurity of person and property are also factors which, in the past, have made the idea of suburban life unpopular with the average man, but the main difficulty is no doubt financial.

26. In the near future, the suburban service of both railways will be vastly improved. A better water-supply is being introduced, proposals are under consideration for strengthening the police, and before long many of the drawbacks of suburban life will have disappeared. But unless some method can be found to assist people to build their own cottage homes, the extension of the tenement building into the suburbs would seem to be inevitable. The various Co-operative building societies conducted on a communal basis do not seem to be an altogether satisfactory solution, for there are restrictions as to title and disposal of properties built by such societies which do not attach to property in general. The building society as it exists in England has not yet made its appearance in Bombay, but Government are considering an experiment on the lines adopted by such societies with a view to demonstrate the possibilities. The idea is that, up to a limited aggregate amount, and in the case of cottages costing not more than, say, Rs. 10,000, Government should advance 50 per cent. of the cost of the house and land to a prospective settler in a Government Suburban Scheme who is able to find the remaining 50 per cent., the advance with interest to be recovered by monthly instalments extending over, say, 15 years. The details of the scheme have still to be worked out, but it is obvious that even if Government agreed to such a scheme, it could only be on a small scale as an experiment, and to demonstrate the possibility of building societies operating on similar lines. Designs of typical cottages suitable for people of moderate means have been prepared and copies will be found in the pocket of this report. Examples of these cottages have been built at



Suburban Scheme No. 3 (Chembur Section "A").
Bungalow (cost Rs. 42,000) erected in the Garden Suburb by the Development Directorate. Date 3rd April 1924.

Chembur to house some of the Directorate staff and can be inspected by those who are interested in the matter.

TOWN PLANNING SCHEMES.

27. The position of the four Town Planning Schemes referred to in paragraph 34 of last year's report is as follows :—

28. *Santa Cruz Town Planning Scheme No. 2.*—The work on this scheme was at a stand still during the year under review for want of funds. Only current repairs were carried out at a cost of Rs. 2,700.

29. *Villa Parle Town Planning Scheme No. 1.*—The work on this scheme was resumed during the year on receipt of a fresh allotment of funds. All the roads have been completed and opened for traffic, but the storm-water drainage has still to be carried out. This will be taken up as soon as further funds are available.

30. *Andheri Town Planning Scheme No. 2.*—This scheme was completed in all respects during the year at a total cost of Rs. 26,500. The expenditure during the year was Rs. 4,500.

31. *Mulund Town Planning Scheme No. 1.*—Only works of the nature of maintenance and repairs were possible during the year, as no funds were available for the completion of the work.

32. No fresh schemes were sanctioned during the year but the six sanctioned in 1922-23, and the eleven detailed in paragraph 34 of the report for 1921-22, seventeen in all, were in various stages of preparation. The present depression in land values is reflected by the fact that petitions were received during the year praying for the cancellation of three of the schemes, *viz.*, Bandra Town Planning Scheme No. 3, Santa Cruz Town Planning Scheme No. 4 and Kandivli Town Planning Scheme No. 1.

SUBURBAN SCHEMES.

33. The list of Suburban Schemes remains as printed in paragraph 39 of last year's report, except that two of them, Suburban Scheme No. 14 Mogra, and Suburban Scheme No. 20 Khopoli, ceased to exist. In the case of the former, the small expenditure, referred to in paragraph 52 of the last report, was transferred to general charges. As regards Suburban Scheme No. 20, there appears to be no immediate prospect of utilising the tail water from the power-house of the Tata Hydro-Electric Power Supply Company at Khopoli, and it was therefore decided to close the scheme by writing off the expenditure, referred to in paragraph 59 of the last report, against the Rs. 4 lakhs per annum set apart out of the receipts from the cotton cess to cover losing schemes in the suburbs. Of the remaining schemes, Nos. 1, 2, 15, 21, 22 and 23 have already been referred to in this report and the position as regards the balance is as indicated below.

34. *Suburban Scheme No. 3—Trombay, North-West.*—The Chembur Sector of this Scheme has now a road system completed and has been

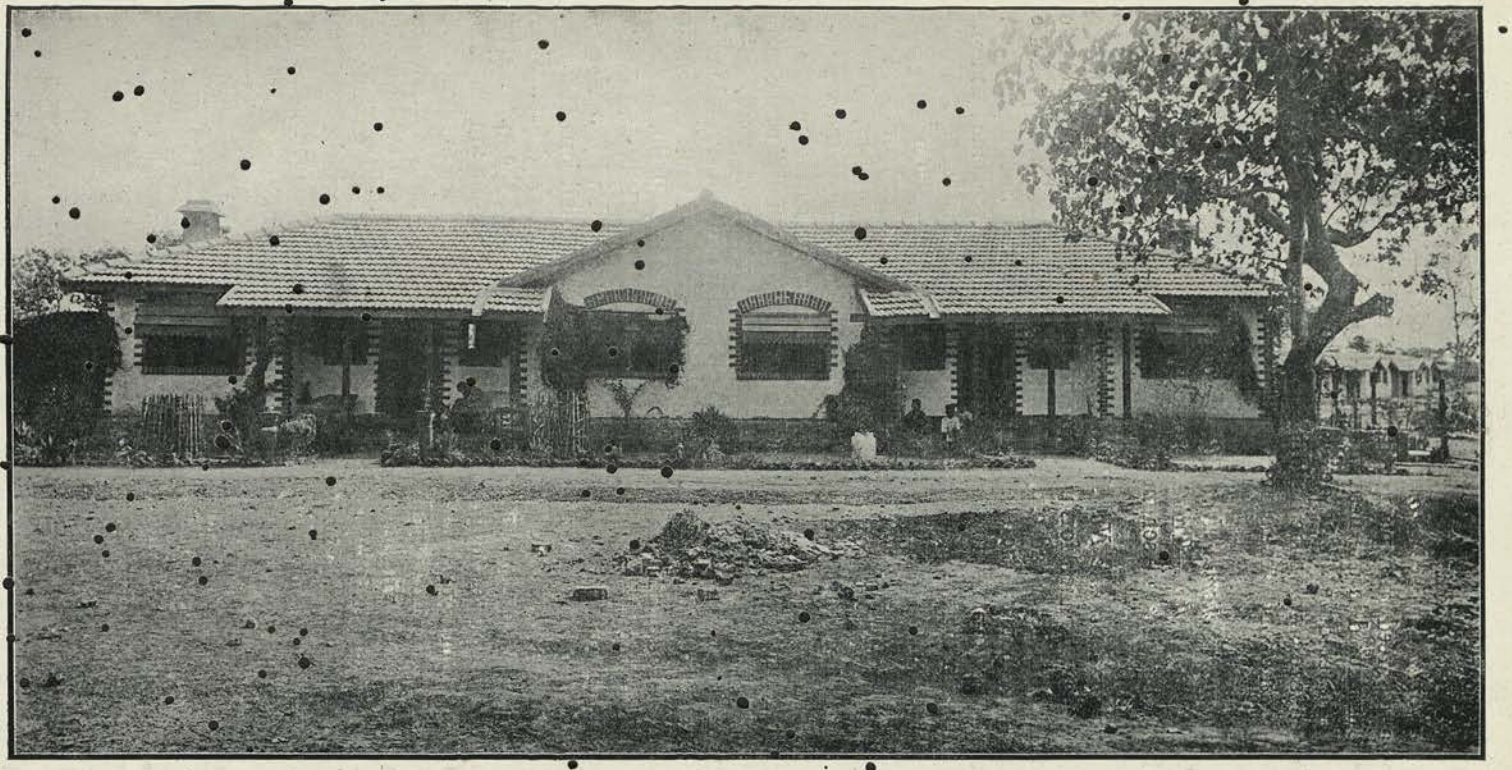
designated "Chembur Garden Suburb". As mentioned earlier in this report, the G. I. P. Railway are now running a passenger service between Kurla and Chembur, a motor coach being employed which makes 14 trips in each direction during the day. The service is well patronised, especially in the mornings and evenings, and this improvement in the communications should do much to popularise the area. An attractive illustrated booklet was published and extensively advertised during the year, with the result that a large number of visitors are being attracted to inspect the Garden Suburb. It is hoped that many will be tempted to purchase sites in this pleasingly situated locality. The trees planted on the road side throughout the Suburb are growing rapidly and give an excellent indication of what the general appearance of the estate will be a year or two hence. A pipe water-supply is now available, thus making unnecessary the sinking of costly wells by plot purchasers, and it is hoped that the opportunity of securing a cottage and garden in place of two or three rooms in a four or five-floored structure will bring many to this suburb.

35. *Suburban Schemes No. 4—Trombay West, and No. 5—Malavni.*—As stated in the report for the year ending 31st March 1923, no works are contemplated in these schemes in the near future, but these areas provide space for a future expansion of suburban development, when occasion arises.

36. *Suburban Scheme No. 6—Danda.*—This scheme was described in paragraph 44 of the last report. During the year under review, several settlements with original owners in the scheme were effected and it is proposed shortly to take in hand the road system in the scheme, including the extension of Turner Road, which will give direct access to the Bandra-Ghodbunder Road and to Bandra Railway Station.

37. *Suburban Scheme No. 7—Khar.*—Work in this scheme was practically in abeyance during the year owing to the prolonged delay of the B. B. & C. I. Railway in the construction of the New Khar Station. It is hoped that the station will be opened for traffic during the monsoon of 1924, when an increased demand for building plots must almost certainly follow. The erection of houses on plots already sold proceeded slowly during the year, but a certain number had been completed and occupied at the close.

38. *Suburban Scheme No. 8—Chapel Road, Bandra.*—The roads throughout the whole of this scheme were completed during the period, and of the net building area of 104,768 square yards, there remained but 21,465 square yards unsold at the end of the year. If the prices realised equal those already received, there will be a surplus of some Rs. 39,000 upon complete development. A proposal is under consideration to utilise the greater part of this, when realised, for filling in a tank in the scheme and thus convert what is now a source of malaria into a permanent recreation ground.



Suburban Scheme No. 3 (Chembur Section "A").
Front elevation of two semi-detached quarters type No. 5 (cost Rs. 4,350 each). Date 3rd April 1924.

39. *Suburban Scheme No. 9—Murzbanabad.*—The owners in this scheme have agreed to a plan of development, and the principal roads may be constructed in the near future, the subsidiary roads being postponed to a later date. The development of the area will cost owners Re. 1 per square yard of the building plot retained *plus*, of course, a contribution of the land necessary for roads.

40. *Suburban Schemes No. 10—Aerodrome near Gilbert Hill, and No. 11—Rann of Juhu.*—There were no further developments in connection with either of these schemes during the year.

41. *Suburban Scheme No. 12—Suburban Trunk Roads.*—During the year this scheme, which formerly provided for the improvement of the Bandra-Ghodbunder Road only, was altered to include all expenditure on trunk road construction or improvement in the Suburban Area. It is intended eventually to recover expenditure in this scheme by means of the special trunk road betterment charge of 4 annas per square yard of developed land in the suburbs. For the present, interest on the capital expended is being met from the Rs. 4 lakhs per annum set apart from the cotton cess receipts to cover losing schemes in the suburbs. During the year a further length of $1\frac{1}{2}$ miles of the Bandra-Ghodbunder Road between Bandra and Andheri was provided with a tar macadam surface, leaving a balance of $\frac{3}{4}$ths of a mile still to be done. In addition, the usual annual repairs in the way of pot hole filling and tar painting were carried out. The total expenditure during the year on improvement and maintenance was about Rs. 95,000. The road from Santa Cruz Station to the Bandra-Ghodbunder Road, a short length of 1,150 lin. feet, was transferred to the Development Department in May 1923, and during the year under report was reconstructed and widened with a view to bringing it up to the standard required for modern conditions of traffic. Rubble soling and a proper thickness of metal was provided for a width of 21 feet, instead of the original width of 14 feet, and the opportunity was taken to improve the grades. The total expenditure amounted to Rs. 10,400. Some preliminary widening of the Bandra Causeway was also carried out at the northern end, where the road was very narrow. The main widening will be undertaken on the east of the Causeway at a later date, when the Bombay Municipality are in a position to commence widening the southern half of the Causeway, which lies within Municipal limits. The work done forms part of the permanent scheme, and will help to relieve congestion until the remainder and more expensive part of the project can be taken in hand. The estimated cost of the improvement is Rs. 48,598, of which Rs. 38,000 had been spent by the end of the year. One other work charged to this scheme was carried out during the year, consisting of a diversion of the Sion-Trombay through Kurla village to avoid a very awkward corner. The improvement is considerable and the cost, Rs. 9,749 only.

42. *Suburban Scheme No. 13—South Salsette Drainage.*—There were no developments in connection with this scheme during the year. Several

projects for draining local areas have been prepared and are under consideration of the local authorities concerned.

43. *Suburban Scheme No. 16—Shahar (Andheri Sector).*—The scheme was submitted to Government during the year and it was decided to proceed with it gradually, provided a substantial proportion of owners in the scheme were prepared to negotiate settlements on the basis of the retention of their lands on payment of a betterment rate. Negotiations were opened by the Land Manager, Development Directorate, with a number of owners, but although there is a general inclination to effect settlements, the majority of owners desire postponement in view of the present state of the land market. The scheme is not, therefore, being pressed at the present time.

44. *Suburban Scheme No. 17—Salsette Trombay Railway.*—The line was practically completed as a single line by the end of the year, except for the bridge over the G. I. P. Railway at Kurla, which has recently been taken in hand by the Railway Company. The main object of the railway is to bring stone for roadmaking in Central Salsette from the quarries in Trombay, and ultimately to provide a tramway service to open up the areas through which it passes which are at present without any means of communication. As roadmaking in Central Salsette is in abeyance owing to the prevailing stagnation in the land market, the line is not required for stone traffic at present, but proposals were under consideration at the close of the year for running a tramway service between Andheri and Kurla, and eventually to Anik when the bridge at Kurla is completed. Such a service would, it is believed, do much to facilitate communication in, and with, large areas now comparatively inaccessible.

45. *Suburban Scheme No. 18—Kirol North.*—Five of the roads in this scheme were completed during the year at a cost of Rs. 40,000. Only one building plot has been sold and no further development is contemplated until the land market shows signs of revival.

46. *Suburban Scheme No. 19—Salsette Water Supply.*—Unlike the majority of the Suburban schemes which are in a state of suspended animation owing to the absence of demand for land, it has been possible to make steady progress with the distribution of the bulk water-supply of 2·7 million gallons daily, obtained from the Municipality; because the expenditure incurred will be met by charges for the sale of water, for which there is an increasing demand. Next to the provision of better communications by rail, there is probably nothing that will help to popularise the suburbs so much as an adequate supply of water.

47. *Water Supply to Santa Cruz and Juhu.*—An estimate amounting to Rs. 1,48,095 was sanctioned in November 1923 and the work of laying the 9″, 8″ and 6″ pipe lines from the Tulsi main was completed at the close of the year at a cost of approximately Rs. 70,000. The work of distribution of the supply in the areas served is actively in hand.

Suburban Scheme No. 3 (Chembur Section "A").
Front elevation of cottage (cost Rs. 5,480). Date 3rd April 1924.

48. *Additions and alterations to Andheri Water-Supply.*—An estimate amounting to Rs. 1,44,405 was sanctioned in December 1923. Tenders were called for and the work of laying the new pipes was put in hand. Work to the value of about Rs. 38,000 had been completed by the end of the year.

49. *Water-Supply in Suburban Schemes Nos. 2 and 3.*—During the year 12,400 feet of pipe line for supplying water for constructing roads and to private owners were laid at a cost of Rs. 61,388.

50. *Water-supply in Suburban Scheme No. 7—Khar.*—An estimate amounting to Rs. 4,900 was sanctioned during the year for extending the temporary water-supply in this scheme to facilitate further building operations which are in progress, and to supply the occupants of houses already completed. This will form part of the permanent scheme, which will be taken up at a later date, when a larger number of houses have been built.

THE ORGANISATION OF THE SUPPLY AND TRANSPORT OF BUILDING MATERIALS.

51. *Sand and shingle.*—The dredger, referred to in the last report, was received in November 1923 and was sent to Mumbra, where it is now working. It has proved very satisfactory and actual figures show that the cost of shingle and sand supplied to the Department has been reduced by about Rs. 5 per brass after taking the capital charges of the dredger into account. A contract has been made for the handling of the material *ex* dredger into wagons on the sidings at Mumbra at a cost of Rs. 7-12-0 per brass. Owing to the successful working of the dredger, the source of supply of sand and shingle will now be confined to Mumbra, and no further sidings will be laid down at other points, certainly for the next two years. The total supplies of sand and shingle during the year were —

Shingle	.. ..	1,639,903 c.ft.
Sand	.. ..	2,376,223 c.ft.

52. *Cement.*—The requirements of cement were satisfactorily met by the Supplying Companies during the year, the total consumption amounting to 38,412 tons.

53. *Bricks.*—Owing to lack of demand for bricks, the manufacture was stopped during the year and the stock in hand will be used in chawl partition walls and for other purposes.

54. *Steel.*—The supply of steel for chawl construction was obtained by indent on the High Commissioner. The total quantity used in chawl construction during the year was 3,588 tons.

55. *Transportation.*—The sidings at Mumbra, Matunga, Worli, DeLisle Road and Sewri proved most efficient and thoroughly justified

their construction. The following table shows the approximate tonnage hauled over each siding during the year under review :—

Siding.	Number of wagons hauled.	Tonnage carried.
Mumbra	5,810	1,05,000
Matunga	2,263	41,000
Worli	5,497	99,000
DeLisle Road	1,112	20,000
Sewri	192	3,500

Steam Lorries.—Owing to the completion of the Marine Lines–Colaba Railway, and the sidings above referred to, the number of steam lorries, essential during the first three years of the work of the Directorate, are now found to be in excess of immediate requirements and it has been decided to dispose of eight lorries and eight trailers, and to retain only eight lorries and four trailers. The total tonnage transported by the lorries during the year was about 65,800 tons.

56. *Total supplies.*—The following statement gives the quantities of the principal materials supplied to works from all sources during the last three years :—

Materials.	Unit.	1921-22.	1922-23.	1923-24.	Total.
Sand ..	C. ft.	405,266	1,390,535	2,376,223	4,172,024
Shingle ..	,,	226,565	1,192,575	1,639,903	3,059,043
Cement ..	Ton.	8,212	15,336	38,412	61,960
Mild Steel bars and wires ..	,,	1,859	1,451	3,588	6,898
Coal ..	,,	934	16,087	10,976	27,997
Vasind bricks ..	..	..	154,364	755,534	909,898

BOMBAY SUBURBAN SURVEY.

57. The survey on the scale of 40 feet to 1 inch of the Suburban and Town Planning Schemes was continued during the months of April and May 1923. Field work was closed down during the monsoon months and the surveyors were sent away for four months on departmental leave, whilst the menial staff was disbanded. On the 1st October the outdoor staff reassembled, when eight surveyors were put on to 40 feet surveys, and two on to the maintenance of the 330 feet surveys, previously done. The maintenance work was completed about the middle of January 1924, when the two surveyors were transferred to 40 feet survey work.

58. *Traverse Survey.*—The area traversed during the year for the 40 feet survey work amounted to 3,992 acres. The services of two traversers were utilised throughout the year but, as they found it difficult to keep

M. C. Wall Chainage 3,200. Concreting Plant including Steel forms. Date 18th October 1923.

ahead of the detail surveyors, one of the latter was put on to assist in traversing from January to 31st March 1924.

59. *Detail Survey on scale of 40 feet to 1 inch.*—The survey, by complete sheets, of a solid block of country extending from Bandra to just north of Andheri and comprising all the Town Planning and Suburban Schemes, situated on both sides of the B. B. & C. I. Railway, was continued and completed by the end of March, when the whole establishment was shifted to the Chembur area. A total of 164 sheets on the 40 feet scale, covering 3,439 acres, were completed during the year.

60. *Fair Drawing and Printing of Maps.*—The maps on the 330 feet scale which had been fair drawn for publication in the previous year and sent to the Photo Zinco Office, Poona, in October 1922 for printing, were returned by the Manager of the Press in November 1923, as he found he was unable to turn out the work in a reasonable time. As, during the period, a certain amount of maintenance work had been completed, the maps were brought up to date and resubmitted for publication. Out of 55 maps, 7 had been printed by the end of the year under review. In addition, 58 sheets of the Bandra and Danda 40 feet survey were sent to press and published during the period, together with a special index map on the scale of 2 inches to 1 mile, showing the 330 feet and 40 feet survey sheets in distinctive colours.

61. *Four inch Map of Bombay and Salsette.*—During the year a general map of "Bombay and Salsette" on the scale of 4 inches to 1 mile, and a similar map of "Greater Bombay", were prepared by the Superintendent, Bombay Suburban Survey, and printed by the Survey of India Office in Calcutta.

ADVISORY COMMITTEES.

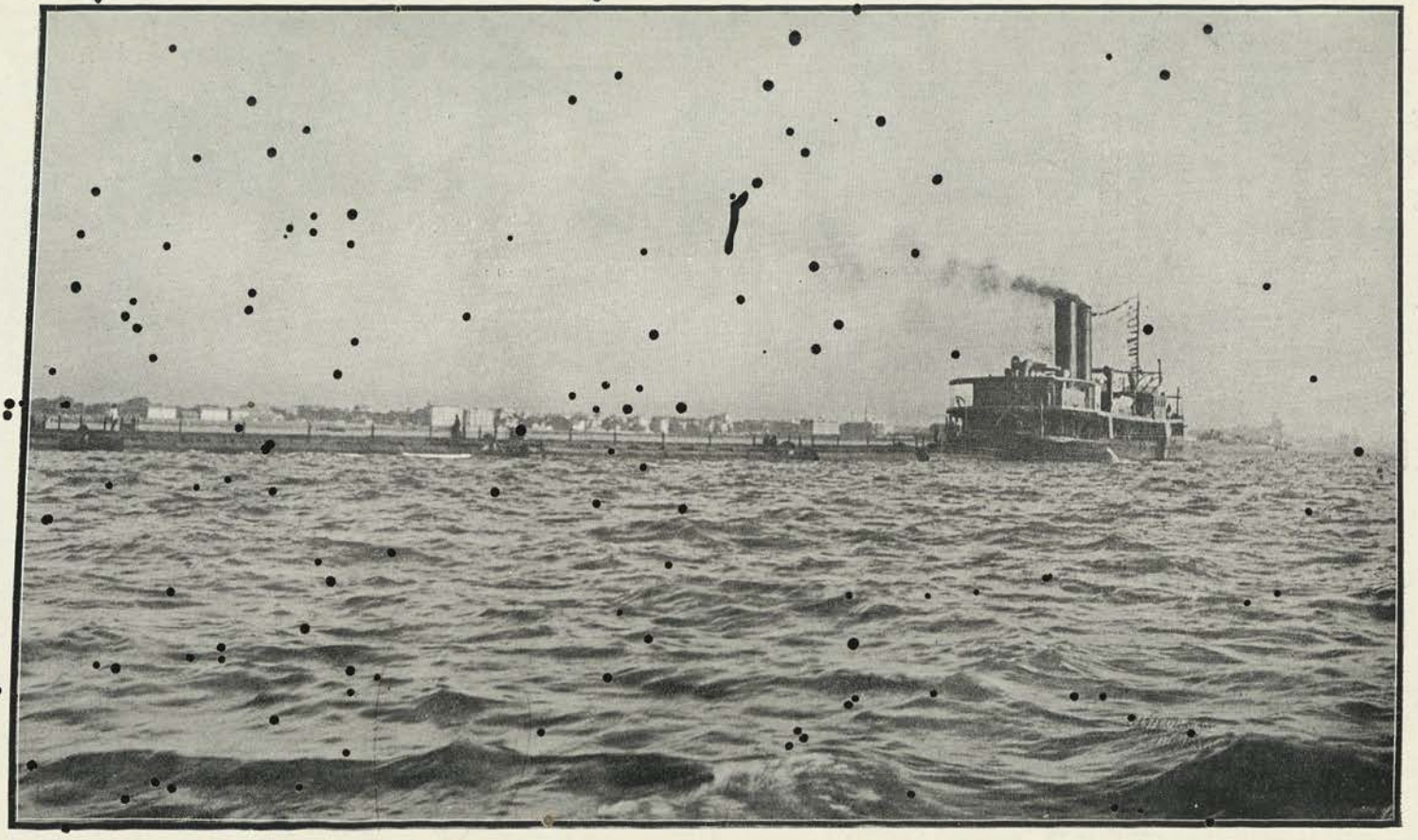
62. During the year a number of joint meetings of the Advisory Committees for Bombay City and Suburbs were held and, in addition, the Committees inspected the reclamation works and housing schemes in Bombay, as well as the Suburban Schemes in Salsette and Trombay. A list of the members of the Advisory Committees, during the year, is given as Appendix "B". The Committees were appointed for three years ending 31st March 1924, and the constituencies concerned have been asked to nominate their representatives for a further period of three years from 1st April.

ORGANISATION OF THE DIRECTORATE.

63. The Organisation of the Directorate is shown in Appendix "C" to the report. During the year there has been an increase in the establishment employed on the Reclamation Works owing to the entertainment of the special technical staff required for working the dredging plant. A special dredging section was organised under an officer of the grade of Deputy Chief Engineer and the Reclamation Branch is, therefore, now organised in four sections, viz., Kandivli Quarry, Marine Lines, Colaba

and Dredging Sections. Apart from the reclamation branch, there has been considerable retrenchment due partly to the slowing down of the activities of the Directorate in the Suburban Area, and also to the substitution of contract for departmental work in the housing scheme. The four Project Divisions have been reduced to two by the amalgamation of Nos. 1 and 4 and of Nos. 2 and 3. There is thus a reduction of two Superintending Engineers as well as corresponding retrenchment in the grades below.

H. A. L. HEPPER,
Director of Development.



View of the Dredger *Sir George Lloyd.*

APPENDIX A.

Copy of the report of the Chairman, Sanitary Committee, Bombay Development Directorate, on the sanitary condition of the Reclamation for the period from the 26th January 1923 to 31st March 1924.

2. Under Government Resolution no. S.A. 62 of the 16th January 1923, the Committee was appointed " to act from the present time until the completion of the Reclamation works with a view to advise Government as to the sanitary precautions which should be taken from time to time in connection with these works ".

3. The first meeting of the Committee was held on the 16th January 1923 under the Chairmanship of Lieutenant-Colonel R. M. Carter, C.B., F.R.C.S., D.T.M., I.M.S., when it was resolved to hold meetings in the Sanitary Institute Hall, Princess Street, with the permission of Dr. J. E. Sandilands, the Honorary Secretary of the Institute. At the same meeting Dr. K. B. Shroff was appointed Honorary Secretary to the Committee and he was given the help of a part-time clerk on Rs. 20 per mensem. Since then, ten meetings were held, and on four occasions the Committee met on the Reclamation works for inspection and discussion.

4. Lieutenant-Colonel R. M. Carter continued as Chairman up to the 13th April 1923, when he proceeded to England on leave. During his absence Lieutenant-Colonel F. P. Mackie, O.B.E., M.D., M.Sc., F.R.C.P., F.R.C.S., I.M.S., acted as Chairman.

5. The Committee at its subsequent meeting decided that a Medical Officer of experience in mosquito work should be appointed early, as there was a good deal of preliminary work to be done before the pumping operations were commenced.

6. As Colonel S. R. Christophers, C.I.E., O.B.E., I.M.S., happened to be in Bombay at that time it was decided that Captain B. S. Chalam, L.R.C.P. & S., D.T.M., I.M.S. (retired), who was in charge of a special malaria investigation on the Nalbari Sugar Estate, Assam, be recommended for appointment to this post as his excellent work in various capacities was personally known both to Colonel Christophers and to Major Taylor, Director of the Bombay Bacteriological Laboratory.

7. Under Government Resolution no. S.A. 661 of 30th April 1923, Captain B. S. Chalam was appointed on a salary of Rs. 650—50—900 *plus* Rs. 150 conveyance allowance and free quarters. His duties were defined as under :—" He will be responsible for the control of anti-malarial operations as well as for the general sanitation of the Reclamation areas and for medical attendance provided for the workmen and such other duties as may be assigned to him ".

8. An office and laboratory apparatus costing Rs. 2,000 were placed at his disposal and for out-door work he was supplied with staff consisting of one inspector on Rs. 200 one sub-inspector on Rs. 75, and 12 coolies on Rs. 25 each. Two Sub-Assistant Surgeons—one for the cooly camp in

Colaba and another for the camp in Marine Lines—and one sanitary overseer at the Colaba camp were also appointed.

9. In order to ascertain the natural conditions which would exist when pumping had commenced, it was decided in 1923 to lay out two plots of land near the reclamation measuring each about 100 square yards as an experimental measure—one filled in with a two feet layer of Back Bay dredgings and another with a similar layer of harbour material, the top of the filling being not more than a few inches above high water mark. The result of this experiment was thus described by the Medical and Sanitary Officer :—

(1) "The Back Bay dredging, if used, will be less likely to increase the Anophelines than the harbour dredgings."

(2) "In the case of harbour dredgings, some contrivance will have to be evolved, whereby it will be possible to check in time the growth of Anopheline larvæ on this soil."

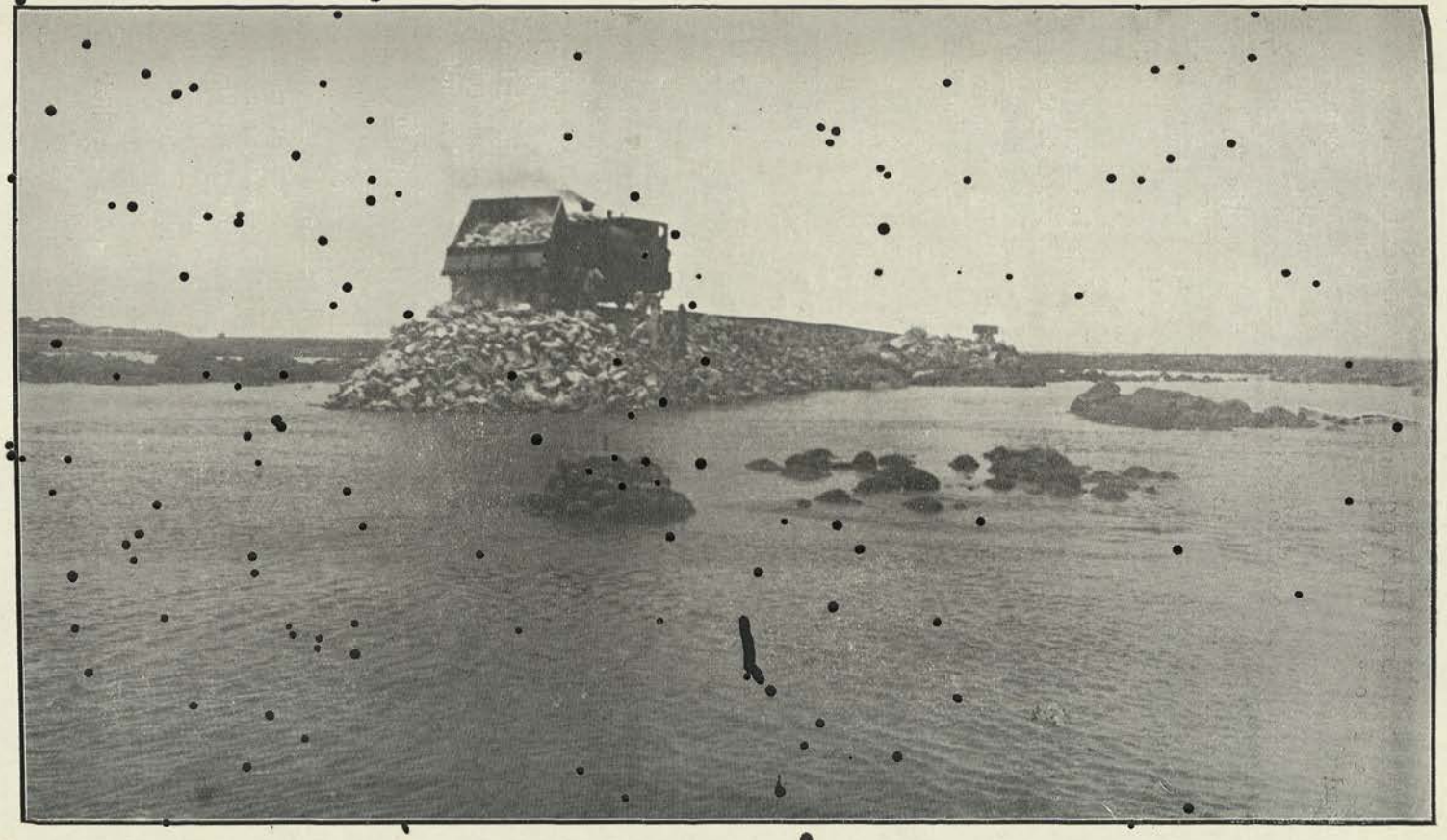
(3) "Colonel Christophers considers that the railway embankment carrying the constructional line along the land margin is a sinister feature. These remarks are amply justified by my actual observations. The area between the embankment and the present land margin is irregular, rocky and full of depressions and hollows. I have found large number of larvæ of Anopheles breeding in this area. If this area can be filled up soon, it will considerably help anti-malaria[illegible]rk."

10. On recommendation of the Committee, the services of Lieutenant-Colonel S. R. Christophers, C.I.E., O.B.E., I.M.S., were placed at the disposal of the Committee by the Government of India "as adviser on occasions whenever his services are required in Bombay for consideration and advice."

11. Colonel Christophers inspected the Back Bay area on 14th March 1923 and discussed the situation with the Committee at its meeting on 15th March 1923. A few extracts from his report are given below :—

"It being known that Anopheles may breed in brackish and even in salt water and Dr. Bentley and others having recorded the fact that A. Stephensi has been found breeding in brackish pools on the Colaba foreshore, some anxiety has been left regarding the probable effects of the large dredging operations to be carried out in connection with the Back Bay Scheme. The actual conditions relative to the breeding of anopheles likely to result on the surface of the dredged material in the course of various stages of solidification and settling extending to a duration of several years are, I think, impossible to predict. These will depend partly on the character and porosity of the material dredged. In large areas of sludge fissuring on an extensive scale may be expected."

"The suggestion to have certain experimental plots on the area is most valuable, as it may indicate precautions that will be necessary at an early stage in the operations and cannot fail to give information of importance."



End Tipping Rubble Mound at R. D. 5,500 (From outside).

"Adequate provision to guard against possible evil effects of the Reclamation operations must include some arrangement for continuous and close observation of the whole area and its surroundings and for that purpose an officer with the necessary knowledge be engaged to commence and continue such observations."

12. He again visited the Reclamation works on the 5th October 1923, while on his way from Singapore, and recommended that all pools on the foreshore should be frequently treated with a larvacide, whether they were breeding or not. In the report on his second visit, Colonel Christophers wrote :—

"The firm porous material from Back Bay is to be preferred so far as liability to the breeding of Anopheles is concerned to the less pervious material from the harbour."

"Parts flooded by neap tides may be disregarded as sources of breeding, but the area between the limits of neap and spring tides is one everywhere of considerable potential danger."

"The most frequent situations for breeding are along the edge of the foreshore between the embankment and the land. This strip should be filled at an early stage of the operations."

"Up to recently the number of breeding places has been relatively small. Hitherto all breeding places detected have been dealt with without difficulty—mostly by regular oiling. In view, however, of the liability at certain seasons for Anopheles breeding places rather suddenly to undergo an increase, I would suggest that when a marked tendency towards increase is seen, regular oiling of all water likely to breed should be adopted, independently of whether larvæ have been demonstrated by searchers."

"There is at present at Colaba, outside the area of the Reclamation, considerable activity in building. There are also some Municipal coolie lines. It would therefore be desirable for Captain Chalam to have the necessary power of entry within the limits of the actual peninsula of Colaba to enable him to keep himself informed regarding the breeding of Anopheles and to have the power to deal summarily, when necessary, with any breeding places that could be oiled." .....

"I think the position of the Committee in regard to the control of malaria on the Reclamation area is sound. Under present arrangements, it is practically impossible that any serious increase in Anopheles could arise without this being at once fully appreciated, and should such increase occur, I see no reason to doubt that effective measures could be at once found to deal with it. As regards the ordinary progress of events, the presence of Captain Chalam and his staff should suffice to control breeding within the area making this freer from Anopheles than it has probably ever been in the past."

13. The Chief Engineer was accordingly requested to expedite the filling in of the area between the Sisters' quarters, the embankment, the end of the yard and the maidan as early as possible.

14. It was subsequently resolved that the Medical Officer of the Development Department should attend to all breeding places in the area to the south of the Telegraph Office belonging to the military and the Bombay Municipality, with whatever help he could obtain from military and municipal authorities in their respective areas.

15. A conference of the following officers was held at the Bombay District Military Head Quarters on the 20th November 1923 to discuss the situation :—

(1) The Assistant Director, Medical Services, Bombay District.

(2) The Municipal Executive Health Officer, Bombay.

(3) The Senior Medical Officer, Colaba.

(4) The Senior Assistant Municipal Health Officer. Malaria.

(5) The Deputy Assistant Director, Medical Services (Sanitary), Bombay District.

(6) Captain B. S. Chalam, Medical and Sanitary Officer, Reclamation.

The conference agreed that :—

(*a*) The military authorities should retain charge of all military land and buildings in Colaba including the Military Lands Scheme in Upper Colaba with the exception of any area of such lands or buildings used by the Directorate in connection with Reclamation work and certain other areas to be mutually decided upon.

(*b*) The Bombay Development Directorate should assume control of :—

(1) Any land or buildings used or occupied in connection with Reclamation operations.

(2) The whole foreshore up to the high water mark.

(3) Certain civil areas normally under the control of the Municipality.

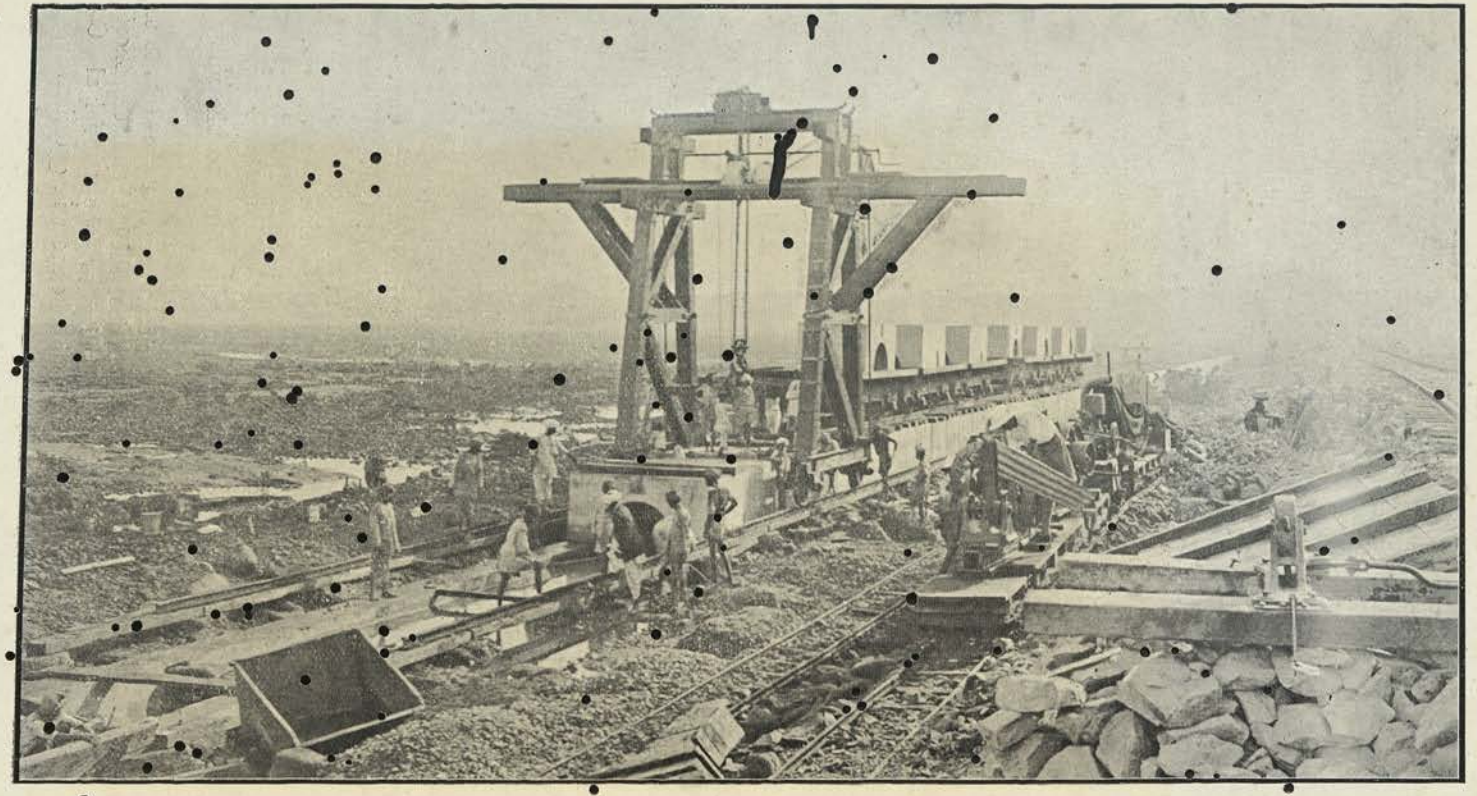
(4) Roads belonging to the Municipality.

(5) Certain other areas to be mutually decided upon including the Military Lands Scheme in Upper Colaba.

Thus in order to avoid triple control Captain Chalam was requested to undertake the supervision of all municipal areas in Colaba. The areas thus transferred are comparatively small in number and extent, and surrounded on every side by military or Reclamation zones.

The Municipal Commissioner and the Executive Health Officer, subject to the sanction of the Corporation, assented to the agreement under heads A and B above arrived at by the conference, subject to the following additional conditions, *viz.* :—

(1) That the municipal officers and inspectors reserve the right to take any action independently or otherwise which they are authorised or required to take by the Municipality or the Municipal Commissioner, under the Municipal Act in the areas in question.



Placing 10-ton pre-cast blocks. No. 1 S. W. D. Date 27th November 1923.

(2) That a sum of Rs. 100 per mensem be paid by the Municipality to the Medical Officer (Reclamation) to cover the wages of the two coolies engaged for work in the added areas and the cost of supervising their work through the Reclamation malaria inspectors.

16. The conclusions arrived at by the Medical and Sanitary Officer in August 1923 may be summarised as follows :—

(1) Brackish water pools are as congenial to the breeding of Anopheline larvæ as collections of fresh water.

(2) Four different species of Anopheline larvæ have been found breeding in both brackish and fresh water collections in the Reclamation area. Two of these, *viz.*, A. Stephensi and A. Culicifacies are proved carriers of malaria in nature.

(3) A certain amount of malaria exists among the coolies housed in Reclamation area.

(4) The prevalence of epidemic malaria is determined by two factors :—

(1) The presence of human carriers of malaria.

(2) The presence of malaria-carrying Anopheles.

Both these factors exist in Colaba to a mild degree and the anti-malarial work is being directed to prevent these factors increasing to a sufficient extent to become a menace.

So far no increase of malaria has occurred but rather the opposite, for on analysing the malarial incidence amongst the troops in Colaba for the last three years, it has been found that the incidence per 1,000 was 972·61 in 1921, 470·66 in 1922, whilst in 1923 it dropped to 169·28. It is probable that the improvement may be due, at any rate in part, to the anti-malarial operations.

There is evidence to show that apart from malaria the nuisance and discomfort of mosquito prevalence has also diminished since anti-mosquito remedies have been adopted. In addition to the work of anti-malarial nature conducted by the Medical Officer-in-charge, he is responsible for the general sanitation of the Reclamation area and for the health of the coolies employed on the work. There are two cooly camps, one at Charni Road, containing about 800 persons, and another at Colaba with about 1,300 persons. There is also a small camp at Woodhouse Bridge containing about 300 persons. The strength of these camps fluctuates very widely depending on the nature of the works being carried out. These camps are under the immediate supervision of the two whole-time Sub-Assistant Surgeons who are available at all times.

The coolies are partly recruited locally but mostly are brought in from outside. Malaria amongst these from fresh infection is practically negligible. From previous infection the malarial incidence amongst them works out to about 8 per cent.

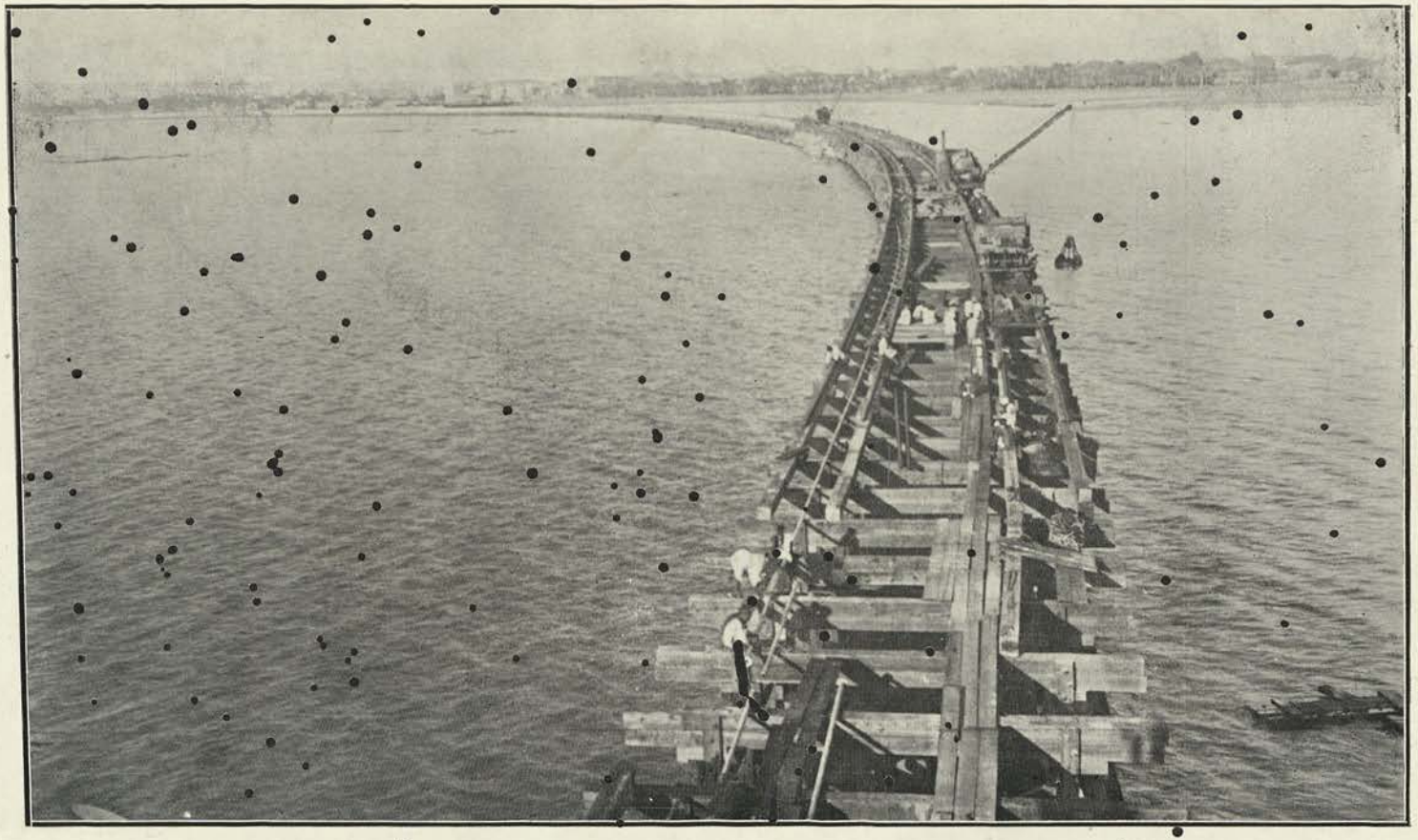
Necessary sanitary arrangements have been carried out in all the three camps, and the general health of the coolies during the period under report has been very good.

The pumping operations commenced on about the 15th December 1923 and the work is still in progress.

The Committee paid three visits after the commencement of the pumping and were satisfied that there was no odour and no nuisance, and that the precautions taken to prevent the breeding of mosquitoes were adequate and effective.

The Colaba end of the Reclamation area is being filled up and the material is dredged from the harbour across the peninsula through a series of pipes. An absolutely odourless, highly impermeable material in the form of solid balls of clay and sand is what constitutes the new reclaimed land.

The dredged material dries up quickly enough in twenty-four hours and presents no difficulty for the anti-malarial gang to walk upon the surface either for the search of the breeding places or the use of larvacides. As the sludge is deposited, a large proportion of the water coming with it is drained off and runs again into the sea. The new land constitutes a very uneven surface with innumerable depressions and the soil being highly impermeable, these surface depressions should require constant attention during the rainy season.



Storm water drain No. 6 R. D. 6,005. Foundation shutters being placed in position.
Date 22nd December 1923.

APPENDIX B.

Members of the Advisory Committees for Bombay City and Suburbs for 1923-24.

BOMBAY.

	Name of Member.	Constituency.
1.	Dr. Nadirshaw H. E. Sukhia, L.M. & S., L.V.Sc. (Spl.), F.R.S.I. (London).	Bombay Municipality.
2.	Fazal Ibrahim Rahimtulla, Esquire, B.A.	Do.
3.	E. G. Tuner*, Essquire, I.C.S. ..	City of Bombay Improvement Trust.
4.	F. A. H. East, Esquire ..	Bombay Chamber of Commerce.
5.	Jehangir Bomanji Petit, Esquire ..	Bombay Millowners' Association.
6.	Lalji Naranji, Esquire ..	Indian Merchants' Chamber.
7.	F. W. Petch,† Esquire ..	Bombay Presidency Trades' Association.
8.	S. K. Bole, Esquire, M.L.C. ..	Working Classes.

BOMBAY SUBURBAN REVENUE DIVISION.

1.	F. A. C. Rebello, Esquire, B.A. ..	Bandra Municipality.
2.	J. S. Pereira, Esquire ..	Kurla Municipality.
3.	P. J. Vakil, Esquire, B.A., LL.B. ..	Ghatkopar-Kirol Municipality.
4.	Moreshwar Vishwanath Pradhan, Esquire, B.A., LL.B.	Notified Area Committees.

*During the absence of Mr. E. G. Turner, I.C.S., on leave preparatory to retirement from January 1924, Mr. R. H. A. Delves worked on the Committee.

†During the absence of Mr. F. W. Petch from the 15th May to the 22nd November 1923, the Bombay Presidency Trades Association elected Mr. G. W. Wardle to act on the Committee.

APPENDIX C.

Development Directorate.

	Designation.	Name.
1.	Director of Development ..	Sir Lawless Hepper, Kt., J.P.
2.	Deputy Director of Development, Secretary to Government, Development Department, and Commissioner, Bombay Suburban Division.	J. R. Martin, C.I.E., I.C.S., J.P.
3.	Deputy Secretary to Government, Development Department, Secretary to the Development Directorate and Assistant Commissioner, Bombay Suburban Division.	H. St. C. Smith, J.P.
4.	Assistant Secretary to Government, Development Department.	R. B. Vachha, M.A., J.P.
	Reclamation Branch.	
5.	Chief Engineer, Reclamation Branch.	Ll. W. Lewis, C.I.E., M.I.C.E., J.P.
6.	Senior Deputy Chief Engineer, Quarry Section, Kandivli.	*G. M. O'Rorke, C.I.E., M.B.E., B.A.I., A.M. I.C.E. (on leave).* C. G. Croudace (acting).
7.	Junior Deputy Chief Engineer, Marine Lines Section.	H. A. Elgee, M.I.C.E.
8.	Junior Deputy Chief Engineer, Colaba Section.	P. Billinton.
9.	Deputy Chief Engineer, Dredging Section.	C. R. Brims.
10.	Personal Assistant to the Chief Engineer, Reclamation Branch.	*Vacant.*
11.	Executive Engineer, Projects ..	W. H. Thomas, A.C.G.I., A.M.I.C.E.
12.	Executive Engineer, Reclamation Branch.	W. F. Anderson, A.M.I.C.E.
13.	Marine Surveyor ..	G. D. Kundaji, M.R.San.I. (Lond.).
14.	Assistant Engineer ..	C. G. Croudace (on deputation).

	Designation.	Name.
	Reclamation Branch—continued.	
15.	Assistant Engineer ..	S. M. Abdulla.
16.	Do. ..	A. N. Seal, B.Sc. (Lond.).
17.	Do. ..	Badrinath Sadanand.
18.	Do. Dredging Section ..	F. M. Surveyor.
19.	Quarry Master ..	E. O. Roberts.
20.	Mechanical Engineer, Quarry ..	A. Bellefontaine.
21.	Dredging Master ..	W. S. Speirs.
22.	Sanitary and Medical Officer, Back Bay Reclamation Scheme.	B. S. Chalam.
	No. 1 Project Division.	
23.	Superintending Engineer, No. 1 Project Division.	T. Harvey, M.Sc., M.I.C.E., J.P. (is also working as Superintending Engineer, No. 4 Project Division, in addition to his own duty).
24.	Executive Engineer, Bombay Housing District No. I.	M. A. Dhoria, B.A., B.E. (acting).
25.	Executive Engineer, Bombay Housing District No. II.	*A. Hamid, F.Sc. (on leave).* Mahomed Hashim, B.E., M.R.San.I., A.M.I.E. (acting).
26.	Executive Engineer, Bombay Housing Sanitary District.	Rao Saheb P. S. Krishnaswami Ayyar.
27.	Assistant Engineer, Bombay Housing District No. I.	S. P. Raju Iyer, B.E. (Mysore).
28.	Do. do. ..	M. A. Dhoria, B.A., B.E. (on deputation).
29.	Do. do. ..	S. S. Rajadhyaksha, B.A., B.E.
30.	Assistant Engineer, Bombay Housing District No. I.	Sirdar Kala Singh.
31.	Do. Bombay Housing District No. II.	Mahomed Hashim, B.E., M.R.San.I., A.M.I.E. (on deputation).
32.	Do. do. ..	S. G. Naravane, E.M. (Columbia University, New York).

	Designation.	Name.
	No. 1 Project Division—continued.	
33.	Assistant Engineer, Bombay Housing Sanitary District.	M. R. Bedy.
34.	Do. do. ..	J. D. Daruwala.
	No. 2 Suburban Division.	
35.	Superintending Engineer, No. 2 Suburban Division.	A. F. Macdonald Clark, M.A., B.Sc., M.I.C.E., J.P.
36.	Executive Engineer, Andheri District.	D. K. Bhave, L.C.E., M.A., B.Sc., A.M.Inst.C.E., A.M.I.Mech. E.
37.	Executive Engineer, Suburban Sanitary District.	T. S. Soorma, B.E.
38.	Executive Engineer, Kurla, Trombay District.	G. W. T. Squires.
39.	Electrical and Mechanical Engineer	A. Lennox Stanton, M.I.E. (India), M.Ams.M.E., A.M.I.M.E., A.M.I.E.E.
40.	Executive Engineer, Central Salsette Railway.	T. A. Pereira.
41.	Executive Engineer, Water Works Scheme, Badlapur.	*J. N. Setna, L.C.E., B.Sc (on leave).*
42.	Assistant Engineer ..	B. M. Flores, B.E.
43.	Do. ..	Rao Saheb K. C. Advani, L.C.E.
44.	Engineer-in-charge, Ambarnath Development Scheme, Ambarnath.	H. K. Vacha, B.A., B.E.
45.	Assistant Engineer-in-charge, Water Works Scheme, Badlapur.	F. J. Campos, B.E.
46.	Assistant Engineer ..	Ramlal Suri.
47.	Do.	R. S. Borker.
48.	Do.	*T. V. Sundaresan, B.A., B.E. (on leave).*
49.	Do.	*Vacant.*
	**No. 4 Project Division.*	
50.	*Superintending Engineer, No. 4 Project Division.	*E. F. Sykes, M.I.C.E. (on leave).*

* The appointment has since been abolished and the Division has been amalgamated with No. 1 Project Division.

	Designation.	Name.
	No. 4 Project Division—continued.	
51.	Executive Engineer, Mechanical District.	W. K. Caldwell.
52.	Executive Engineer, Materials District.	J. R. Colabawalla, M.Soc.E. (Lond.), A.M.I.E. (India), A.Am.I.E.E.
53.	Assistant Engineer ..	Lala Kanhiyalal.
54.	Do. ..	Nand Kishor Agrawal.
	Suburban Survey.	
55.	Superintendent, Bombay Suburban Survey.	W. J. Newland, J.P.
	Land Acquisition, Bombay.	
56.	Land Acquisition Officer for the City of Bombay.	G. C. Rowe, F.S.I., J.P.
57.	Assistant Land Acquisition Officer for the City of Bombay.	*Vacant.*
58.	Personal Assistant to the Land Acquisition Officer for the City of Bombay.	S. D. Nariman, B.A.
	Land Manager, Development Directorate.	
59.	Land Manager, Development Directorate.	E. M. Gilbert-Lodge, F.S.I., F.I.A., F.A.I., J.P.
60.	Personal Assistant to the Land Manager, Development Directorate.	K. R. Doctor, L.C.E.
61.	Special Assistant Land Manager, Development Directorate.	D. G. Sowani, B.Sc., B.E.
	Salsette Development.	
62.	Collector, Bombay Suburban District, and Salsette Development Officer.	G. E. L. Carter, I.C.S.
63.	Deputy Collector and Personal Assistant to the Salsette Development Officer and Assistant Development Officer, Bandra.	D. S. Modak, M.A.

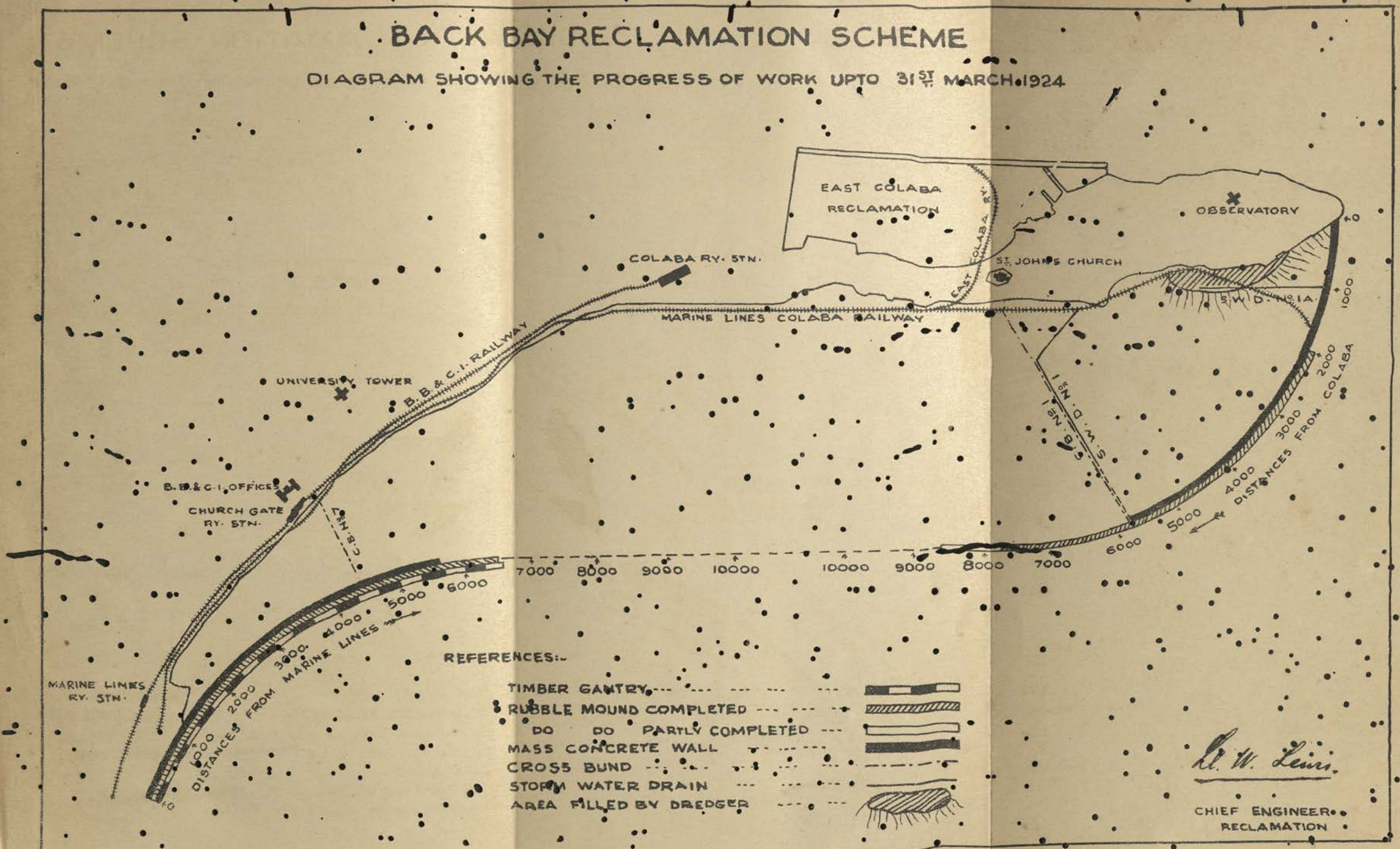
	Designation.	Name.
	Salsette Development—continued.	
64.	Assistant Development Officer, Kurla.	D. M. Ranadive, B.A.
65.	Assistant Development Officer, Ambernath, and 2nd Personal Assistant to the Salsette Development Officer.	P. H. Diwan, B.A.
66.	Assistant Development Officer, Trombay.	A. K. Nulkar.
67.	Additional Assistant Development Officer, Trombay.	J. D. Nanavati, B.A.
68.	Special Assistant to the Collector, Bombay Suburban District.	E. de B. Jewell.
	Audit and Finance.	
69.	Financial Adviser to Government ..	J. C. Nixon, I.C.S.
70.	Deputy Financial Adviser to Government and Audit Officer, Bombay Development Scheme.	S. M. L. Bean.
71.	Assistant Audit Officer, Bombay Development Scheme.	*R. Hogan (on leave).* M. V. Telang (acting).
	Military Lands Scheme.	
72.	Secretary, Board of Control and Chief Engineer.	Colonel R. St. J. Gillespie, C.I.E., O.B.E., J.P.
73.	Deputy Chief Engineer ..	Major A. H. C. Trench, C.I.E., R.E., M.I.E.E.
74.	Executive Engineer .	F. Walker.
75.	Assistant Engineer .	I. C. Dare, F.R.S.A., F.S.I., A.M.I.C.E., M.I.S.E.
76.	Do. .	G. B. Fritchley, A.R.I., B.A.
77.	Do. .	Capt. W. Murray Macdonald, M.C.
78.	Do. .	K. J. Mhatre, B.A. (Hons.), (Bombay and Cantab.).
79.	Architect ..	J. Fernandez.
80.	Financial Adviser to the Board of Control, Military Lands Scheme.	S. M. L. Bean.
	Consulting Town Planner.	
81.	Consulting Town Planner ..	W. R. Davidge, F.R.I., B.A., F.S.I., A.M.Inst.C.E.

BOMBAY: PRINTED AT THE GOVERNMENT CENTRAL PRESS.

00133189

BACK BAY RECLAMATION SCHEME

DIAGRAM SHOWING THE PROGRESS OF WORK UPTO 31ST MARCH 1924



H. W. Lewis.

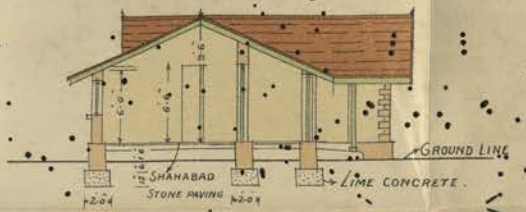
CHIEF ENGINEER
RECLAMATION

TYPE COTTAGES.
2 ROOMS KITCHEN & BATH ROOM
IN BLOCK OF FOUR UNITS.

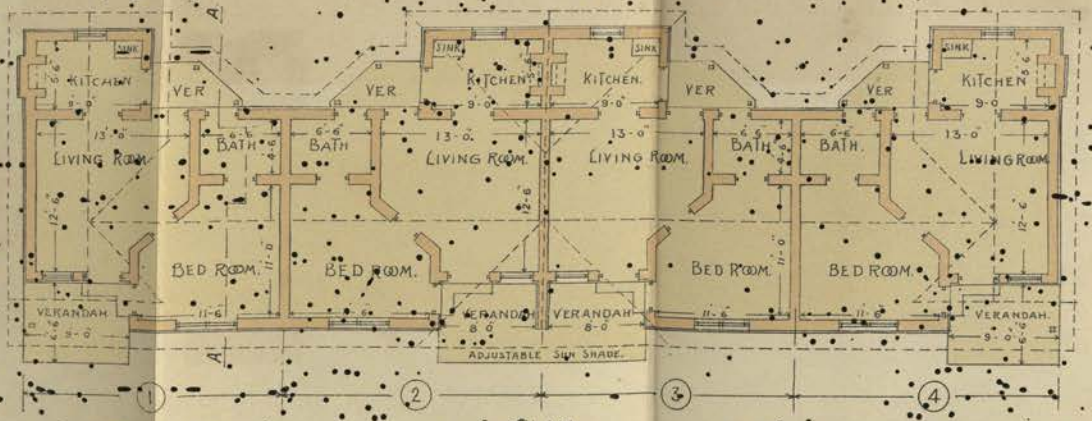
SCALE 8 FEET TO AN INCH

(A)

FRONT ELEVATION.



SECTION A.A.



PLAN

PLINTH AREA OF ONE QUARTER.	
INCLUDING W.C.	536 SFT.
CUBICAL CONTENTS.	5049 CFT.
COST AT RS -/8/- PER CFT.	RS 2525.

ALL MASONRY IN BURNT BRICKS.

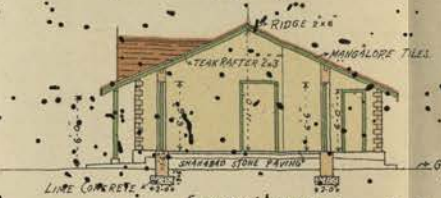
N.D. DESAI
16-5-24.

Govt. Photozince Office, Patna, 1924.

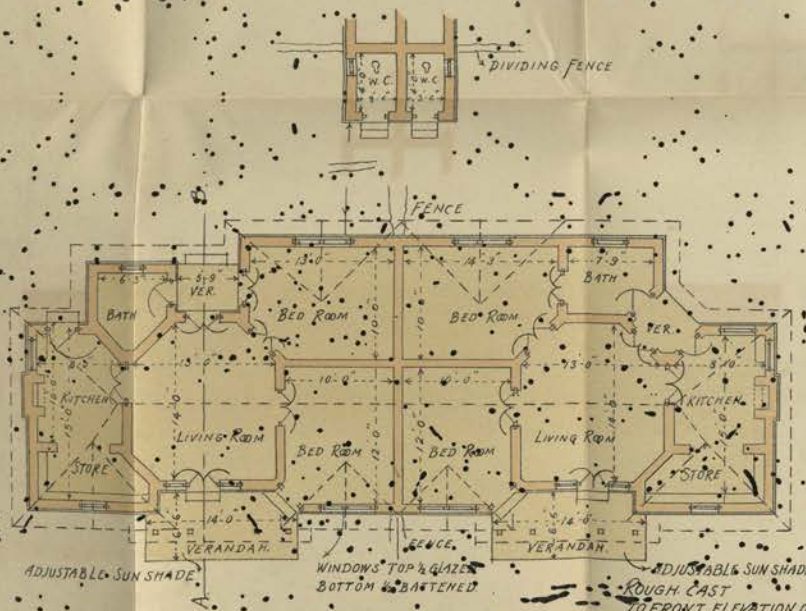
TYPE COTTAGES
3 ROOMS, KITCHEN, BATH ROOM & STORE, SEMI DETACHED.

SCALE 8 FEET TO AN INCH.

FRONT ELEVATION.



SECTION ON A.B.



PLAN.

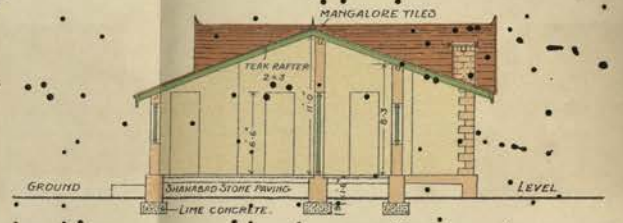
PLINTH AREA OF ONE QUARTER.
INCLUDING W.C. = 840 S.FT.
CUBICAL CONTENTS = 9132 C.FT.
COST AT Rs -/7/6 PER C.FT. = Rs 4281.
ALL MASONRY IN BURNT BRICKS.

TYPE COTTAGES
2 ROOMS, BATHROOM & STORE
SEMI-DETACHED.

SCALE 8 FEET TO AN INCH.

(B)

FRONT ELEVATION.



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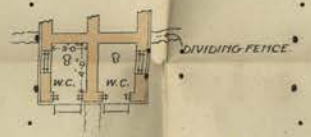
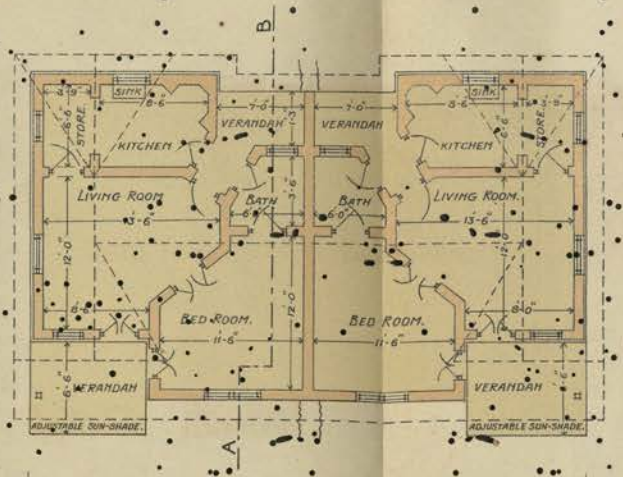




PLAN

PLINTH AREA OF ONE QUARTER INCLUDING W.C.	= 565 S FT.
CUBICAL CONTENTS	= 6009 C FT.
COST AT Rs. -/8/- PER C FT	= Rs. 3004.

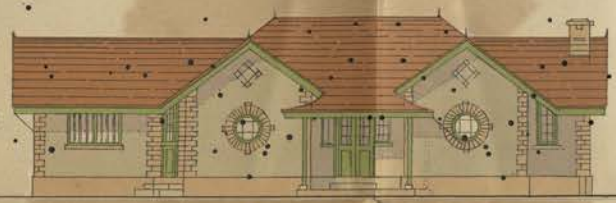
ALL MASONRY IN BURNT BRICKS.

Litho Dept Photozinco Office Poona 1924.

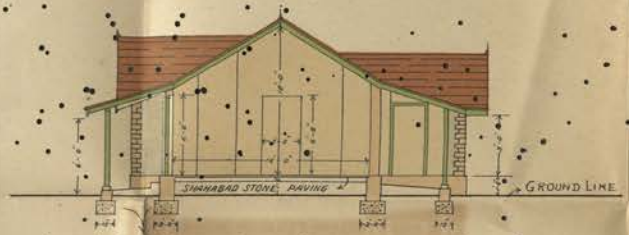
TYPE DETACHED COTTAGE
3 ROOMS, KITCHEN, BATH ROOM & STORE.

SCALE 8 FEET TO AN INCH.

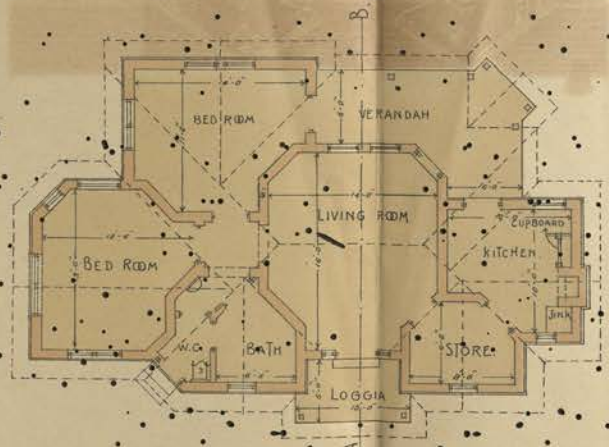
D



FRONT ELEVATION



SECTION A.B.



PLAN

PLINTH AREA = 1074 SFT
CUBICAL CONTENTS = 11885 C.FT
COST AT Rs 7/6 PER C.FT = Rs 5572
ALL MASONRY IN BURNT BRICKS.

N.D.DESAI 14.V.24.

Govt. Photozinco Office, Poona. 1924.

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